of these factors together, it does seem that PCS has at least a fighting chance to significantly underprice cellular services" (*TR Wireless News*, July 14, 1994).

24. One indication that those in a position to have the best information believe that PCS systems will be significant competitors is the substantial interest in, and the prices that companies are expected to bid for, PCS licenses.

25. Three pioneer preference 30 MHz MTA licenses have been awarded by the Commission. Remaining broadband PCS licenses presumably will be awarded next year. Thirty MHz broadband PCS licensees are required by the Commission to offer service to at least one-third of the population of their market areas within 5 years and two-thirds within 10 years. Ten MHz licensees will be required to cover 25 percent within 5 years or, alternatively, to submit a showing of "equivalent or substantial service" (*TR*, June 13, 1994, at 5).

2. Enhanced Specialized Mobile Radio Services (ESMR)

26. Specialized Mobile Radio (SMR) and ESMR service, like cellular service, uses spectrum in the 800-900 MHz range. The Commission has allocated 19 MHz to SMR/ESMR (*CMRS Second Report* at n. 296). In part because of restrictions imposed by the Commission, SMR has been used primarily for fleet radio-dispatch service. While most SMR systems currently use analog technology, according to a recent study 23 percent of the SMR industry is planning to implement digital technology in the next year. Digital technology will substantially increase capacity and permit firms to offer ESMR service, including integrated voice, messaging, paging, dispatch, and data services (*Land Mobile Radio News*, April 1, 1994; *Communications Week*, June 6, 1994, at 33).

27. Hausman concludes that "ESMR will provide a close substitute to cellular service" (Jerry A. Hausman, "Affidavit," *United States v. Western Electric Co., et al.*, D.D.C., 1992, at 16). Although ESMR may have certain handicaps compared to cellular (*CMRS Second Report* at ¶143), ESMR may offer a wider array of services. According to an industry analyst, many

"customers were using SMR and cellular as two separate services, and now Nextel is offering them a package deal. Nextel also offers some advanced messaging capabilities that only a handful of cellular providers have begun to offer" (*Communications Week*, May 30, 1994, p. 31).

28. Nextel, Dial Page, and OneComm have been acquiring SMR systems nationwide and entering into agreements to provide regional, and eventually national, ESMR service (*Communications*, April 1994, at 76, 78). Nextel has agreed to merge with Dial Page and OneComm and to acquire all Motorola's SMR operations. Assuming these transactions close, Nextel's licenses will cover approximately 85 percent of the nation's population in bandwidth slices ranging from 10 to 15 MHz per market (*Multichannel News*, Sept. 5, 1994), and it will have more than 650,000 of the reported 1.5 million SMR subscribers nationwide (*TR*, Aug. 8, 1994, at 39-40; *Mobile Satellite News*, Mar. 2, 1994). Because of the large number of systems under common ownership and the common use of the Motorola Integrated Radio System (MIRS) digital technology, Nextel will have advantages in offering seamless national service (*Land Mobile Radio News*, April 1, 1994). Nextel also has equity shares in Canadian and Mexican SMR providers.

29. An important issue is how long it will take ESMR providers to make their services available as substitutes for cellular service. Motorola has introduced handsets for transmitting voice, data, and fax messages over ESMR. According to press reports, Nextel offers ESMR integrated voice, paging, and two-way radio services in a number of areas today, and expects to offer these services in several other areas by the end of 1994, when it expects to begin testing switched data services as well. It expects to begin testing packet switched services in 1995. OneComm plans to offer ESMR service in several areas in 1994. Dial Page is aiming to offer service in the South and Midwest in 1995. It is also reported that the major "MIRS-based ESMR providers have banded together and said they will offer seamless nationwide service as they deploy their networks during the next 2-1/2 years" (*Communications Week*, June 6, 1994).

D. Competitors for Cellular in Wireless Data Transmission

30. Wireless data transmission service will be even less concentrated than cellular-type service because all the providers of cellular-type service will be in the market along with a number of other types of providers.

31. At the local level, cellular providers can offer data services using circuit-switched technology. For example, in Buffalo the non-wireline carrier offers circuit-switched cellular data service for purposes such as remote monitoring (*Communications Daily*, Aug. 3, 1994). Cellular providers are implementing a nationwide network using cellular digital packet data (CDPD) technology. A number of cellular companies have begun using CDPD, including McCaw in Las Vegas and Bell Atlantic Mobile in Baltimore-Washington and Pittsburgh (*Computer Reseller News*, May 23, 1994, at 152; *Financial Services Report*, May 25, 1994). Bell Atlantic has predicted that CDPD will be in the top 60 markets by the end of 1994 (*Advanced Wireless Communications*, May 11, 1994).

32. SMR providers currently can offer wireless data service at the local level. There are also two providers of national wireless data network services, both of which are non-cellular: Ardis, owned by Motorola, and RAM Mobile Data, owned by BellSouth and RAM Broadcasting, have packet switched radio networks in large cities nationwide. In addition, satellite-based services offered by companies such as Qualcomm are used heavily by the trucking industry for purposes such as dispatching, messaging, and tracking vehicle and package locations (*En Route Technology*, July 5, 1994).

33. Non-cellular competitors that are entering wireless data service include Metricom, which has a network operating in the Silicon Valley area and hopes that by the end of 1996 the top 30 U.S. metropolitan sites will be equipped and running; Nextel and other ESMR providers; and narrowband PCS providers, such as Mobile Telecommunication Technologies' National Wireless Network, which is slated for roll-out in mid-1995 (*TELECOMREG Digest*, Aug. 8, 1994; *Computer Reseller News*, April 4, 1994, at 55; *Mobile Data Report*, Feb. 28, 1994). PageNet, which has three na-

tional paging frequencies, is also able to provide wireless data services (*Newsbytes News Network*, July 25, 1994).

E. Performance

34. The OPUC has offered no analyses or data to demonstrate that cellular carriers have been exercising market power. By contrast, there is evidence of competitive behavior, and cellular customers have been benefiting from increasing service at declining real prices.

1. Pricing

35. The real prices of cellular service, adjusted for inflation, declined during each portion of the past decade for which I am aware of systematic studies. Besen *et al.* (at 2) report that on average in the ten largest cellular service areas real prices for access and 250 minutes per month of prime time use declined by 38 percent during 1983-1991. Another study reports that on average real prices for 150 minutes of air time per month declined by 27 percent or more during 1985-91 in the top 30 cellular markets (U.S. General Accounting Office, *Telecommunications: Concerns About Competition in the Cellular Telephone Service Industry*, 1992 (GAO), at 22-24). Hausman (at 13) reports that real prices declined about 10-12 percent per year during 1987-92. At the same time, customers have benefited from expanding service areas.

36. Evidence on the price elasticity of industry demand for cellular service shows that cellular prices have not been at monopoly levels. An industry demand curve for cellular service measures the total demand for services from all cellular providers in a market, as opposed to the demand for the services from just one provider. The price elasticity of demand at a point along a demand curve measures how responsive the quantity demanded is to a change in price. If the price elasticity of demand is equal to one, then a one percent increase in price leads to a one percent reduction in quantity demanded. This implies that total revenue (price times quantity) is not changed by a small price increase. If the price elasticity is less than one, a one percent increase in price leads to a reduction in quantity demanded of less than one percent. This implies that total rev-

enue will increase if price is increased. It is common for an industry demand curve to be characterized by a price elasticity of demand of less than one at low price levels and for the elasticity of the curve to increase as the price level is increased.

37. A price elasticity of less than one is consistent with competitive pricing and inconsistent with monopoly pricing. Hausman concluded that cellular systems typically operated at a point along the industry demand curve for cellular services at which the price elasticity of demand was substantially less than one (Hausman at 14). Hausman's finding implies that cellular systems were charging prices substantially below the monopoly level. This can be demonstrated as follows: If they had charged higher prices, given an elasticity of demand of less than one they would have increased their revenues (see ¶37). They would also have sold less output, and this would have enabled them to reduce their costs. Thus, a higher price would have increased profits both by increasing revenues and reducing costs. From this Hausman infers that cellular suppliers were not colluding to raise prices to the monopoly level.

2. Capacity and Output

38. Cellular capacity, geographic coverage, and output have expanded rapidly throughout the past decade. The number of cellular subscribers increased from near zero in 1984 to 6.4 million in June 1991 and 19 million in the first half of 1994 (Hausman at 10; *Washington Post*, Sept. 6, 1994, at B4, citing the Cellular Telephone Industry Association). Besen *et al.* report that "Growth in cellular airtime also has been substantial, although it has been slower than the growth in number of subscribers because later subscribers have tended to use the service less intensively than earlier adopters" (Stanley M. Besen, Robert J. Larner, and Jane Murdoch, "The Cellular Service Industry: Performance and Competition," Charles River Associates, 1992, at 1).

3. Innovation

39. In addition to declining real prices and increased output, cellular systems appear to have been performing well in other dimensions. There

has been substantial technological change, permitting better service (for example, reduced interference and fewer blocked and dropped calls), new services (for example, information services, voice mail, personalized traffic routing, and data services such as remote monitoring), and higher capacity and lower costs (for example, digital conversion). There have been many innovations in pricing and other aspects of plans used to market services (for example, pricing plans aimed at high and low use customers and occasional callers, discounts for usage outside the central business district, and equipment discounts and free air time for new customers).

4. Discrimination

40. The OPUC indicates that it uses its complaint authority on a case-by-case basis to deal with complaints by resellers that cellular carriers are setting wholesale rates that are "unduly discriminatory, preferential to its affiliates, or set below cost for the purpose of inhibiting competition" (Ohio Petition at 2). The Ohio petition presents no evidence that rates for wholesale service are unduly discriminatory.

41. In a system of dual distribution in which a wholesale seller offers service both through company-owned retail outlets and through independent retailers, independent resellers have an incentive to complain to regulatory officials in the hope of getting better treatment from their suppliers. The existence of complaints is not evidence of anticompetitive behavior, as much antitrust law and commentary makes clear (Phillip Areeda and Herbert Hovenkamp, *Antitrust Law,* 1993 Supplement, Little Brown, 1993, at 808-14; Owen and Braeutigam, chap. 1). When they complain about bulk discounts that are available, in practice, only to high-volume affiliates of the wholesalers, the resellers are in effect asking for protection against competition from these affiliates, either in the form of a discriminatory low price applicable to low-volume resellers, or in the form of umbrella pricing of high-volume service to the affiliates. Ohio has done none of the analysis necessary to demonstrate that the practices of which its resellers complain harm retail customers. Nor will regulation to protect independent retailers necessarily help consumers.

42. Furthermore, regulation to protect resellers may harm consumers. If cellular carriers know that regulators will protect resellers, they may be unwilling to take steps that would reduce resellers' share of retail sales. Thus, they may prevent their own retail outlets from competing vigorously with resellers. In this case, regulation would prevent retail distribution from being done by the least-cost providers, to the detriment of subscribers.

43. Price discrimination is charging different prices to different customers for the same service in the absence of cost justifications. To determine whether there is discrimination, one must compare differences in prices with differences in costs. Ohio has not compared allegedly discriminatory prices with costs to determine whether they meet the definition.

44. In any event, the issue here is not merely whether there is any price discrimination, but whether such discrimination if it exists is unjust and unreasonable. Discrimination is not necessarily bad; it sometimes promotes economic efficiency (F.M. Scherer and David Ross, *Industrial Market Structure and Economic Performance,* Houghton Mifflin, 1990, at 494-502; Dennis W. Carlton and Jeffrey M. Perloff, *Modern Industrial Organization,* Scott, Foresman, 1990, at 448-451). Furthermore, regulatory restraints on price discrimination can make anticompetitive behavior more likely. For example, restrictions on price discrimination in the Interstate Commerce Act of 1887 facilitated collusive pricing by U.S. railroads (Scherer and Ross at 501).

45. To determine whether discrimination is unreasonable from an economic point of view, one must analyze the effects of the discrimination on economic efficiency and consumer welfare. Ohio has not shown that discriminatory rates, if they exist, reduce consumer welfare.

46. Ohio apparently is concerned that cellular carriers have an incentive to limit the ability of resellers to compete in retail sales. However, there is no persuasive evidence that exercise of market power by cellular carriers is a significant problem. Without such evidence, there is every reason to believe that, unless their incentives are distorted by gov-

ernment regulations, each cellular system has a powerful incentive to have each of the steps involved in providing service-—including retail marketing as well as such things as call recordation and billing—done in the least-cost manner, whether this involves independent resellers or vertical integration or both. Minimization of costs contributes to profits both directly and by enabling the firm to reduce prices and increase sales. Under these circumstances, there is no reason to expect that decisions by CMRS providers relating to either bundling of services sold to resellers or prices charged to resellers will have an adverse effect on competition or consumer welfare.

47. To see why policy concern about resellers is misplaced, assume for purposes of this discussion that, absent regulation, the carriers would enjoy market power, and that independent resellers could perform an important competitive role in marketing mobile communications services. Even in these circumstances, the carriers would have no reason to engage in the behavior that Ohio fears.

48. There are two reasons why Ohio's concern is unwarranted. First, to the extent that the carriers have market power, there is no reason why they could not fully exploit that power by charging high prices for their service. Their market power would not be enhanced by the practices feared by Ohio. Unless carriers were the least-cost providers of relevant services, they would not increase their profits by vertically integrating into retail marketing or by requiring resellers to purchase bundled services, including services such as call recordation, from them. Second, if the carriers attempted to squeeze resellers that could play an important competitive role in marketing their services, or that could perform services such as call recordation at lower costs, this would increase the costs of providing services to consumers and reduce the quantity of mobile communications services sold, reducing the carriers' profits.

49. Furthermore, the share of independent resellers in retail sales has no direct implications for consumer well-being. In some markets suppliers are vertically-integrated into retailing, in some they use dual distribution systems and sell to consumers both directly and through independent re-

sellers, in others they sell only through resellers, and in some markets some suppliers use one of these organizational forms and others use another. All these options are compatible with competition. If the share of resellers has been declining, the reasonable inference is that resellers are not as efficient as other forms of retail distribution. Consumers are not hurt when the relative use of an inefficient form of distribution declines. Policies to encourage inefficient distribution will hurt consumers.

F. Conclusions on Market Structure and Performance

50. There is no sound empirical basis for a conclusion that cellular systems have been exercising significant market power. There is evidence of competition, and concentration will fall substantially over the next several years. Consequently, there is no empirical basis for believing that there is a problem with market performance that would warrant the substantial costs that would be imposed by OPUC regulation of CMRS pricing. Thus, the Commission should continue its historical forbearance from economic regulation of this industry and should deny the Ohio petition.

IV. Effectiveness of Regulation

51. The OPUC has presented no convincing evidence that its regulation of cellular carriers, or that of any state, has provided significant benefits to consumers.

52. Some states have been regulating cellular service prices while others have not. If price regulation benefited consumers, it should be possible to demonstrate that prices are just and reasonable in states with price regulation while they are not in states without such regulation, other things equal.

53. The OPUC has not attempted to provide such an empirical justification for rate regulation. In fact, a study by Hausman comparing prices in regulated and unregulated states shows that state regulation of the CMRS industry has *not* reduced prices. Prices were 5 to 16 percent higher

in states that required advance notice tariff filings than in states that did not regulate prices (Hausman at 10).

54. The ineffectiveness of state regulation of the cellular industry is not surprising. In many other industries regulation has not helped, and in fact has harmed, consumers. Winston recently examined evidence on the effects of deregulation of industries including airlines, railroads, trucking, and telecommunications. He found that in each of these industries consumers were better off after deregulation (Clifford Winston, "Economic Deregulation: Days of Reckoning for Microeconomists," *Journal of Economic Literature,* Sept. 1993, at 1284).

55. In the period from about 1975 to 1984, the Federal government deregulated a number of industries on the basis of a consensus among scholars and policy makers that regulation, on the whole, failed to improve consumer welfare, and in many cases reduced it. Among the reasons for this conclusion was the fact that special interests were often overrepresented in the regulatory policy-making process, compared to the consumer interest, making predictable but often specious arguments to protect their parochial interest in continuing regulation. Consequently, prices and services in regulated industries departed, often considerably, from those that would have prevailed in the markets that regulators had displaced. Even though those markets were only imperfectly competitive, their performance seemed likely to improve as a result of deregulation. And so, on the whole, it did (Winston; Sam Peltzman, "The Economic Theory of Regulation after a Decade of Deregulation," *Brookings Papers on Economic Activity: Microeconomics,* 1989, 1-41; Roger G. Noll and Bruce M. Owen, *The Political Economy of Deregulation: Interest Groups in the Regulatory Process*, American Enterprise Institute, 1983, at 3-65).

V. Costs of Rate Regulation

56. State regulation of prices charged by CMRS providers would have no benefits. It would, however, result in substantial costs. First, regulated prices would inevitably be below the efficient level in many circumstances. This is inevitable because regulators simply lack the resources to determine what price levels are efficient, and they lack the resources to

change regulated prices as cost and demand conditions change. Furthermore, regulators are likely to base regulated prices on faulty economic analysis.

57. Price regulation also limits the ability of regulated firms to respond to changes in technology, cost and demand conditions, and deters new investments, quality improvements, introduction of new services, and entry by reducing returns on pro-competitive activities. The distorting effects of price regulations that limit returns on investments are likely to be greatest in industries such as CMRS that are characterized by rapid growth, technological change, and relatively high risk.

58. In industry after industry, regulation has restricted the introduction of new products and new sources of competition. For example, Commission regulations in the late 1960s and early 1970s delayed the growth of cable television (Owen and Wildman at 215). Other industries in which regulation was used to prevent or restrict competition include international telecommunications, title insurance, surface freight transportation, and airlines (Owen and Braeutigam; Peltzman).

59. It is also important to remember that government regulations involve substantial administrative costs both for the industries being regulated and for the government.

VI. The Need for Regulation

60. While the OPUC states that its regulation of CMRS currently is limited, the OPUC wants to preserve its rights to regulate not only rates but market entry more stringently in the future (Ohio Petition at 4). Given that competition in this industry is steadily increasing, however, if the OPUC cannot now demonstrate that such regulation would be in the public interest, it is unlikely ever to be able to do so.

61. There is no evidence that rate regulation has been warranted or effective elsewhere, even in the past when the market was quite concentrated. It is unclear why the OPUC is considering traditional market entry regulation when its objective is to foster competition. Further,

mobile communications services remain in their infancy, with rapidly growing demand and continual product, process, marketing and rate design innovations. This is not a market in which one would expect to find stable cooperative arrangements among the competitors, even if it is assumed that they are duopolists in the relevant market. Moreover, price and entry regulations impose high costs, particularly in an industry undergoing rapid change.

62. Differences in regulation among states may lead cellular firms to distort investment and innovation decisions. A cellular firm operating in more than one state might invest and innovate sooner in states that do not have rate regulation than in states that do. Consumers in regulating states may suffer from these distortions. Furthermore, regulations in some states are likely to have adverse spillover effects in other states that do not regulate. For example, price controls in some states are likely to reduce the returns to improvements in service that would make sense only if they were put into effect in all states in which a carrier operates, and thus such improvements are likely to be deterred or delayed. This outcome does not appear to have been intended by Congress.

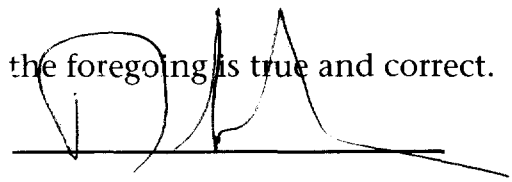
63. For these reasons, there is no basis for assuming that rate regulation of CMRS will be any more necessary or desirable in the future in Ohio than it is today.

VII. Conclusion

64. For the reasons given above, I have concluded that decisions on pricing of CMRS services are best left to the market rather than being subjected to state regulation. There is no persuasive evidence that government price controls would have significant benefits, but they would have substantial costs. Approval of continuing state price regulation would therefore be likely to harm consumers. Neither cellular systems nor other

CMRS providers have unilateral market power. Regardless of concentration levels, conditions in markets for CMRS are not conducive to successful collusion, and there is no persuasive evidence that CMRS providers have been exercising significant market power. To the contrary, there is evidence of sufficient competition to warrant reliance on market forces rather than government regulation. Moreover, concentration will fall substantially over the next several years. Consequently, there is no empirical basis for believing that there is a problem with market performance that would warrant regulating CMRS pricing. Overall, I conclude there is no basis for the Commission to alter its conclusion that competition is sufficient to justify forbearance with regard to regulation of CMRS pricing. Nothing about Ohio requires an exception to these conclusions.

I declare under penalty of perjury that the foregoing is true and correct.

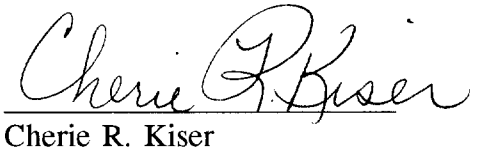


Bruce M. Owen

September 19, 1994

CERTIFICATE OF SERVICE

I, Cherie R. Kiser, do hereby certify that a copy of the foregoing Opposition of McCaw Cellular Communications, Inc. was served on the following by hand or by first class mail, postage prepaid this 19th day of September 1994.



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